REMARKS

Claims 1-6 and 8 are currently pending in the present application.

The rejection of claim 6 under 35 U.S.C. § 102(b) over Stewart is respectfully traversed.

Unlike amended claim 6, which is drawn to a *magnetic tape*, Stewart discloses a *photographic film* comprising a thermoplastic polymeric substrate overlaid with a strip of *non-ferromagnetic* metal, such as stainless steel (see e.g., abstract, column 1, lines 25 and 42, column 2, line 67, column 3, line 17, column 4, lines 15, 19, 20, 55 and 56). In addition, Stewart fails to disclose the claimed curvature and length values associated with the reference side edge, which extends along the longitudinal direction of the magnetic tape. This lack of disclosure is not surprising since photographic film does not require a predetermined curvature value in order to improve the linear running characteristics thereof, which is required for the magnetic tape of the present invention. Furthermore, Stewart fails to disclose the claimed limitations of servo signals being recorded on tracks positioned along a longitudinal direction of the magnetic tape.

In view of the foregoing, withdrawal of this ground of rejection is respectfully requested.

The rejection of claims 6-8 under 35 U.S.C. § 103(a) over Hattori in view of Stewart is respectfully traversed.

The deficiencies associated with the disclosure of Stewart, as discussed above, are incorporated herein by reference in their entirety.

The present invention is drawn to a linear-recording magnetic tape having a particular curvature and length associated with the reference side edge, which extends along the longitudinal direction of the magnetic tape. The present invention is also drawn to a linear-recording magnetic tape comprising a plurality of tracks having servo signals recorded

thereon, wherein said tracks with recorded servo signals are parallel to the reference side edge and extend along the longitudinal direction of the linear-recording magnetic tape.

The present specification discloses (page 4, lines 5-22, page 5, lines 22-25, and page 6, lines 1 and 2) the following:

> "In a typical *linear-recording* tape, a magnetic layer or a back coat layer has tens to hundreds of tracks which are provided parallel in the width direction and extend along the longitudinal direction. *On such tracks, servo signals are recorded.* The positions of such tracks in the width direction are each determined by the distance from one edge called reference edge. If the tape is regularly wound along the flange on the reference edge side, therefore, *the linear-running characteristics and the servo characteristics can be improved.* If the liner-running characteristics decrease with the servo characteristics, it can be hard to read the recorded data, so that the error rate can be increased.
>
> For the purpose of regularly winding the tape along the flange on the reference edge side, *the reference side edge should be moderately shorter in length than the other side edge*; namely, *the tape should have a moderate curvature along the longitudinal direction.*"
>
> "The present invention provides a linear-recording magnetic tape having *an edge on a reference edge side shorter in length than that on the other side.*"
>
> "The present invention provides the linear-recording magnetic tape, wherein *the magnetic tape has a curvature of 1 to 5 mm per 1 m of the tape.*"

The magnetic tape of the present invention exhibits a *curvature* associated with the reference side edge, which extends along the longitudinal direction of the linear-recording magnetic tape in order to improve the linear running characteristics thereof. In contrast, Hattori discloses a magnetic recording tape having: "*curl as small as possible*" (column 12, lines 51 and 52); "*almost no curl*" (column 17, line 65, and column 18, line 1); and "*no curl*" (column 17, line 61).

Accordingly, a skilled artisan would not have been motivated to purposely impart a curvature to the linear-recording magnetic tape of the present invention, since Hattori provides clear guidance for reducing curvature as much as feasibly possible, with a "curl as small as possible," "almost no curl" and "no curl" being particularly preferred. Based on such a disclosure, a skilled artisan would readily recognize that the disclosure of Hattori is

directed to *helical scan* magnetic tape, as opposed to *linear-recording* magnetic tape, which requires a predetermined curvature value in order to improve the linear running characteristics thereof.

An additional noteworthy distinction is that the linear-recording magnetic tape of the present invention has tracks with recorded *servo signals* that are *parallel* to the reference side edge and extend along the longitudinal direction of the linear-recording magnetic tape. Applicants submit that Hattori does not disclose the linear-recording magnetic tape as presently claimed, but rather a helical scan magnetic tape (a.k.a., DAT and DDS magnetic tape) having a plurality of tracks with recorded *servo signals* that extend *diagonally* along the longitudinal direction of the helical scan magnetic tape (column 23, lines 10, 24, 50 and 62, column 24, lines 52 and 66, column 25, lines 6, 15, 23, 34, 41 and 62, column 30, lines 37 and 63, column 31, lines 3, 12, 36 and 59, and column 32, lines 4, 13, 25, 36 and 66). This distinction is evidenced by the following internet publications, which are enclosed herewith for the Examiner's convenience: http://www.answers.com/topic/magnetic-tape; and http://www.answers.com/helical%20scan.

Therefore, the linear-recording magnetic tape of the present invention is structurally distinct from the helical scan magnetic tape disclosed in Hattori.

As acknowledged by the Examiner on page 5, lines 13 and 14 of the outstanding Official Action, Hattori likewise fails to disclose a magnetic tape having a side edge on a reference edge side that is shorter in length than that on the other side.

Applicants submit that a skilled artisan would not have been motivated to modify the disclosure of Hattori with that provided by Stewart, since these references are drawn to *non-analogous art*. More specifically, the disclosure of Hattori is directed to *magnetic recording tape*, whereas the disclosure of Stewart is directed to *photographic film*. Applicants further submit that even if sufficient motivation does exist for combining the disclosures of these two

unrelated prior art references, the disclosures of Hattori and Stewart, when taken alone, or in combination, nevertheless fail to anticipate or render obvious the presently claimed invention.

In view of the foregoing, withdrawal of this ground of rejection is respectfully requested.

The Examiner is respectfully reminded that in the event that the product claims drawn to the elected invention are found allowable, method claims drawn to the non-elected invention, which are commensurate in scope with the allowed product claims, should be rejoined and examined for patentability, pursuant to MPEP § 821.04 and *In re Ochiai*, 71 F.3d 1565, 37 USPQ2d 1127 (Fed. Cir. 1995).

In conclusion, Applicants submit that the present application is now in condition for allowance and notification to this effect is earnestly solicited.

Respectfully submitted,

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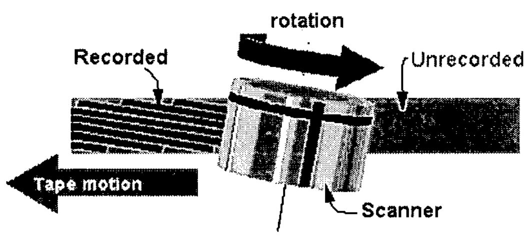
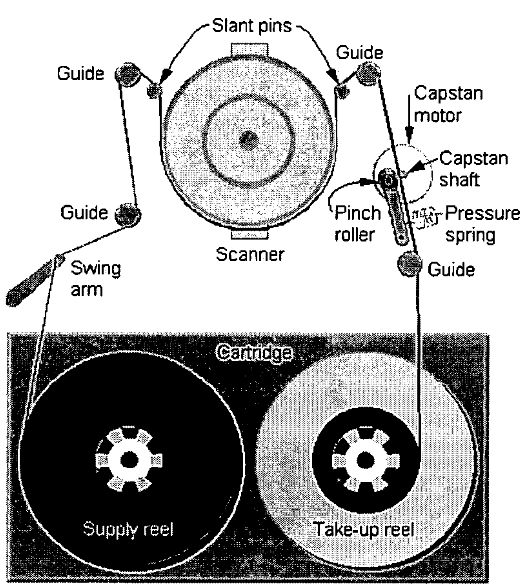
Computer Encyclopedia TechEncyclopedia

helical scan

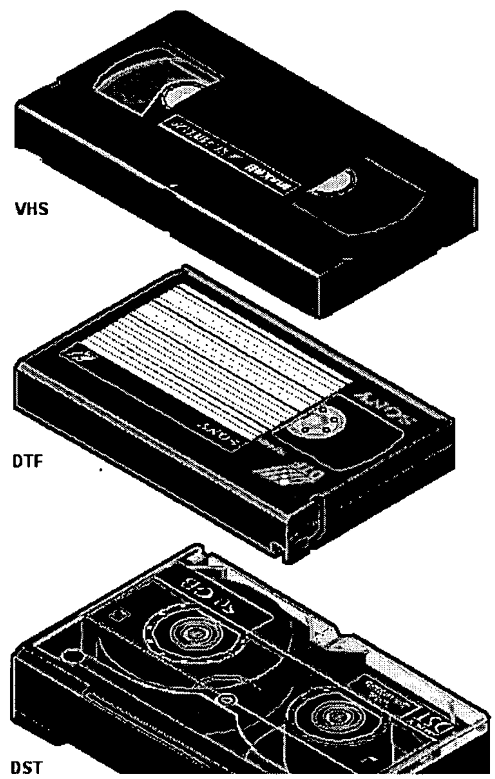
A tape recording method that uses a spinning read/write head and diagonal tracks. Although it uses a rather complex transport mechanism, it is very gentle on the tape. After the cassette is inserted into the drive, the tape is pulled out and wrapped around the read/write head. While the head rotates as much as 30 meters per second, the tape travels as little as 1 inch per second (ips), compared to linear technologies where the tape travels at more than 100 ips.

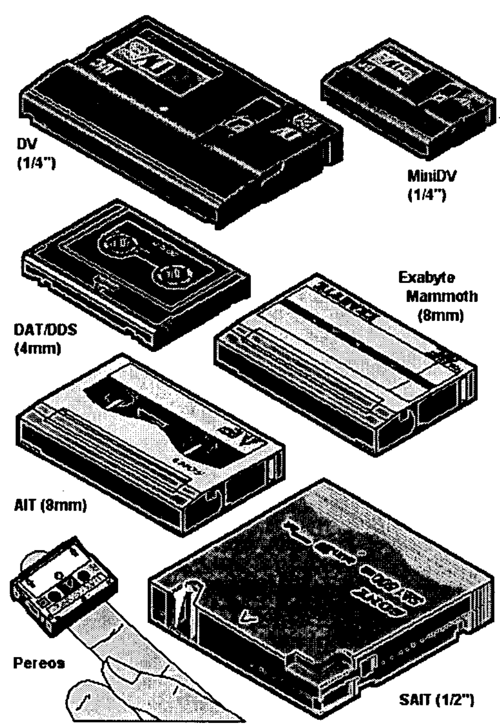
Helical scan was invented by Ampex in 1956. It was the only method that provided fast-enough transfer rate and sufficient storage capacity to record video on tape so that TV programs could be recorded. Using two-inch tape and running at 15 ips, the going rate for tape recorders of the time, the rotating head created an effective rate of 1500 ips. The helical scan method is used in many different tape technologies, including VHS videotape, DV/MiniDV (camcorders), 4mm DAT, Exabyte's 8mm and Mammoth lines, Sony's AIT and StorageTek's Redwood.





Helical Scan
The helical scan method uses a rotating head and diagonal tracks, which allows a slow-traveling tape to provide a very fast transfer rate. The tape is pulled out of the cartridge and wrapped around the read/write head.





Helical Scan Formats

As you can see from this illustration, there are numerous helical scan formats used for digital storage. The predecessors to VHS tape (top) were the reason for helical scan in the first place. Although mostly used for analog recording, there have been digital applications of VHS tape as well.

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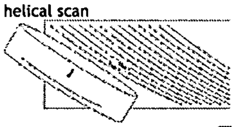
The Real Thing
Notice the slant on this helical scan head from a VHS video recorder. This precise angle of the head is used to record and play back all helical scan formats.

Two Related Articles from CMP's TechWeb

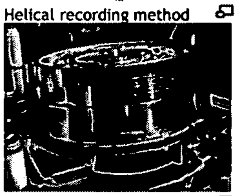
- "Ultrium" Tape Products Ready To Roll
- Bomb-Detector Tops X-ray's Effectiveness

Wikipedia

helical scan



Helical recording method



The head drum of a Hi-Fi NTSC VHS VCR; three of the six heads face the reader. The helical path of the tape around the drum can clearly be seen.

The same head drum with the rotating portion elevated for clarity

The rotating portion of the head drum showing the rotary transformer and three of the six tape heads used in this particular VCR

Helical scan or *striping* is a method of recording higher bandwidth signals onto magnetic tape than would otherwise be possible at the same tape speed with fixed heads. It is used in video cassette recorders, digital audio tape recorders, and numerous computer secondary storage and backup systems.

In a fixed head system, tape is drawn past the head at a linear speed. The head creates a fluctuating magnetic field in response to the signal to be recorded, and the magnetic particles on the tape are forced to line up with the field at the head. As the tape moves away, the magnetic particles carry an imprint of the signal in their magnetic orientation. If the tape moves too slowly, a high frequency signal will not be imprinted – the particles' polarity will simply oscillate in the vicinity of the head, to be left in a random position. Thus the bandwidth capacity of the recorded signal can be seen to be related to tape speed – the faster the speed, the higher the frequency that can be recorded.

Video and digital audio need considerably more bandwidth than analog audio, so much so that tape would have to be drawn past the heads at very high speed in order to capture this signal. Clearly this is impractical, since tapes of immense length would be required. (However, see VERA for details of a partially-successful linear videotape system.) The generally adopted solution is to rotate the head against the tape at high speed, so that the relative velocity is high, but the tape itself moves at a slow speed. To accomplish this, the head must be tilted so that at each rotation of the head, a new area of tape is brought into play; each segment of the signal is recorded as a diagonal stripe across the tape. This is known as a helical scan because the tape wraps around the circular drum at an angle, traveling up like a helix.

There were a number of practical problems to be overcome with this system. The high tape/head speed could lead to rapid wear of both the tape and the head, so both need to be polished extremely smooth, and the head made of a hard wearing material. In addition, most systems operate with an air bearing separating the heads from the surface of the tape. Supplying signals to a rotating head is also problematic – this is usually accomplished by coupling the signal(s) inductively through a rotary transformer as shown in the third

photograph. The transport mechanism is also much more complex than a fixed head system, since, during loading, the tape must be pulled around a rotating drum containing the head(s) so that a complete stripe can be recorded on each revolution. In a VCR for example, the tape must be pulled right out of the cassette case and threaded around the drum, and between the capstan and pinch roller. This leads to complex and potentially unreliable mechanics.

Azimuth recording

Every videotape system attempts to pack as much video as possible onto a given-sized tape, but information from one recording stripe (pass of the video head) can't be allowed to contaminate information on the adjacent stripes. One method to provide isolation between the stripes is the use of **guard bands** (unrecorded areas between the stripes), but this wastes valuable tape space.

Helical scanning recorders instead usually use a method called **azimuth recording**. The head drum usually contains two heads with the magnetic gap of one head tilted slightly leftwards and the magnetic gap of the other head tilted slightly rightwards. (The tilt of a magnetic head is referred to as its *azimuth* adjustment.) Because of the alternating tilts, each head will not strongly read the signal recorded by the other head and the stripes can be recorded immediately next to each other, alternating between left tilt on one television field and right tilt on the next television field. (In practice, it's not uncommon for the recorded stripes to overlap somewhat.)

Using azimuth recording, the need for guard bands is completely eliminated.

Contrast with quadruplex recording

Helical scanning was a logical progression beyond an earlier system (pioneered by Ampex) known as quadruplex recording, also referred to as *transverse* recording. In this scheme, the rotating head drum ran essentially perpendicular to a 2 inch wide tape and the slices recorded across the tape were nearly perpendicular to the tape's motion. U.S. quadruplex systems revolved the head drum at 14,400 revolutions per minute (240 revolutions per second) with four heads on the drum so that each television field was broken into sixteen stripes on the tape (which required appropriately complex head-switching logic!). By comparison, the longer stripe recorded by a helical scan recorder usually contains an entire TV field and the two-headed head drum spins at the frame rate (half the field rate) of the TV system in use.

Industrial & home video media

Magnetic	VERA (1952) · 2 inch Quadruplex videotape (1956) · 1 inch type A videotape (1965) · 1/4 inch Akai (1967) · U-matic (1969) · Cartrivision (1972) · Video Cassette Recording (aka VCR) (1972) · V-Cord (1974) · VX (aka "The Great Time Machine") (1974) · Betamax (1975) · 1 inch type B videotape (1976) · 1 inch type C videotape (1976) · VHS (1976) · VK (1977) · SVR (1979) · Video 2000 (1980) · CVC (1980) · VHS-C (1982) · M

tape	(1982) · **Betacam** (1982) · Video8 (1985) · MII (1986) · D1 (1986) · S-VHS (1987) · D2 (1988) · Hi8 (1989) · D3 (1991) · D5 (1994) · Digital-S (D9) (1997) · S-VHS-C (1987) · W-VHS (1992) · DV (1995) · Betacam HDCAM (1997) · D-VHS (1998) · Digital8 (1999) · HDV (2003)
Optical discs	LaserDisc (1978) · Laserfilm (1984) · CD Video · VCD (1993) · **DVD-Video** (1996) · MiniDVD · CVD (1998) · SVCD (1998) · FMD (2000) · EVD (2003) · FVD (2005) · UMD (2005) · VMD (2006) · HD DVD (2006) · **Blu-ray Disc (BD)** (2006) · DMD (2006?) · AVCHD (2006) · Tapestry Media (2007) · Total Hi Def (2007) · HVD (TBA) · PH-DVD (TBA) · SVOD (TBA) · Protein-coated disc (TBA) · Two-Photon 3-D (TBA)
Grooved Videodiscs	Baird Television Record aka Phonovision (1927) · TeD (1974) · Capacitance Electronic Disc aka CED (1981) · VHD (1983)

Answers.com

Dictionary

American Heritage® dic·tion·ar·ies

magnetic tape
n.

A plastic tape coated with iron oxide for use in magnetic recording.

Modern Science

HOUGHTON MIFFLIN COMPANY

magnetic tape

A device for storing information, in which signals are recorded by lining up small bits of magnetic materials in the coating on the tape. Ordi nary tape recorders use magnetic tape.

Computer Encyclopedia

TechEncyclopedia

magnetic tape

A sequential storage medium used for data collection, backup and archiving. Like videotape, computer tape is made of flexible plastic with one side coated with a ferromagnetic material. Tapes were originally open reels, but were superseded by cartridges and cassettes of many sizes and shapes.

Tape has been more economical than disks for archival data, but that is changing as disk capacities have increased enormously. If tapes are stored for the duration, they must be periodically recopied or the tightly coiled magnetic surfaces may contaminate each other.

Sequential Medium

The major drawback of tape is its sequential format. Locating a specific record requires reading every record in front of it or searching for markers that identify predefined partitions. Although most tapes are used for archiving rather than routine updating, some drives allow rewriting in place if the byte count does not change. Otherwise, updating requires copying files from the original tape to a blank tape (scratch tape)

and adding the new data in between.

Track Formats

Tracks run parallel to the edge of the tape (linear recording) or diagonally (helical scan). A linear variation is serpentine recording, in which the tracks "snake" back and forth from the end of the tape to the beginning.

Legacy open reel tapes used nine linear tracks (8 bits plus parity), while modern cartridges use 128 or more tracks. Data are recorded in blocks of contiguous bytes, separated by a space called an "interrecord gap" or "interblock gap." Tape drive speed is measured in inches per second (ips). Over the years, storage density has increased from 200 to 38,000 bpi. See helical scan and compact tape.

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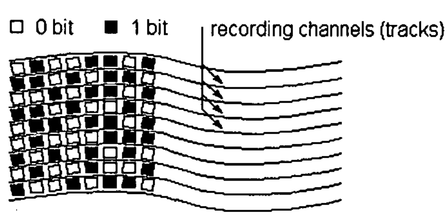
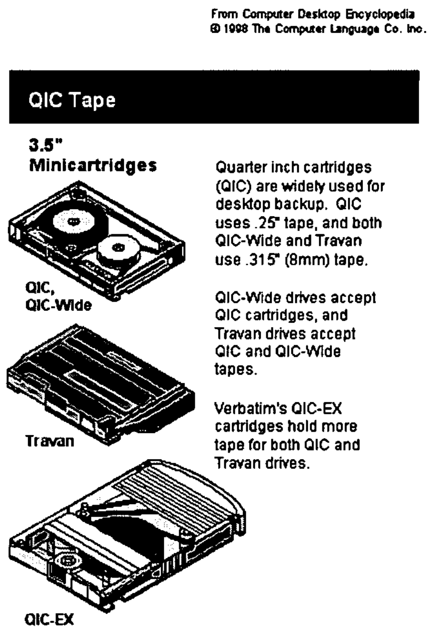


Tracks on Magnetic Tape
Except for helical scan recording, most tracks on magnetic tape run parallel to the length of the tape.

Magnetic Tape Summary

The following magnetic tape technologies are summarized below. See also magnetic disk and optical disk.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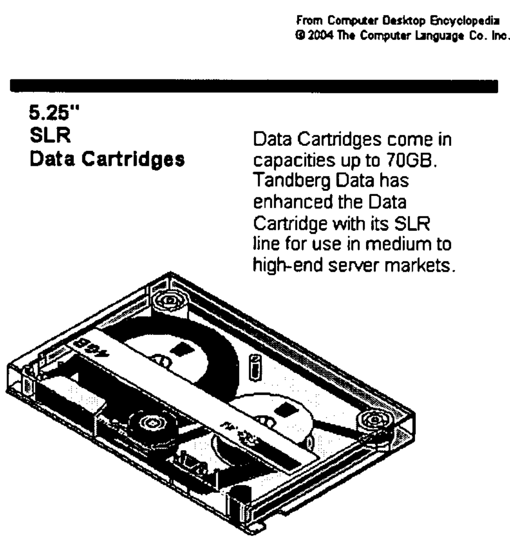
QIC Tape
3.5"
Minicartridges
Quarter inch cartridges (QIC) are widely used for desktop backup. QIC uses .25" tape, and both QIC-Wide and Travan use .315" (8mm) tape.
QIC-Wide drives accept QIC cartridges, and Travan drives accept QIC and QIC-Wide tapes.
Verbatim's QIC-EX cartridges hold more tape for both QIC and Travan drives.
QIC,
QIC-Wide
Travan
QIC-EX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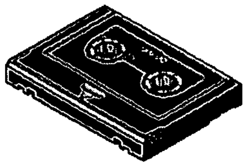
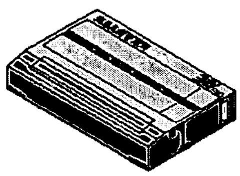
5.25"
SLR
Data Cartridges
Data Cartridges come in capacities up to 70GB. Tandberg Data has enhanced the Data Cartridge with its SLR line for use in medium to high-end server markets.

DAT 4mm Tape



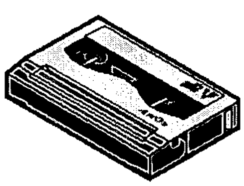
DAT tapes use the DDS recording standard. The cartridges look like small audio cassettes, and users love the compact format.

Exabyte 8mm Tape



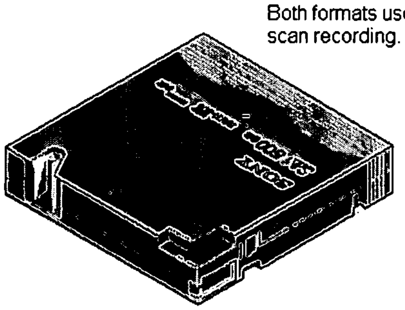
Exabyte's 8mm tapes, provide capacities from 2.5 to 60GB. The Mammoth drive is the high-end unit. The cartridges are smaller than a deck of playing cards.

AIT 8mm and SAIT 1/2" Tape

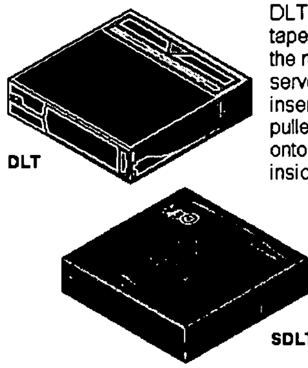


Sony's AIT (8mm) and SAIT (1/2") cartridges include a Memory-In-Cassette feature, which is a chip that stores tape status and indexing information.

Both formats use helical scan recording.

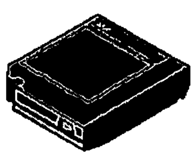


DLT Tape



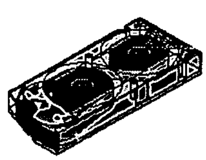
DLT and Super DLT tapes are widely used in the mid to high-end server market. After insertion, the tape is pulled from the cartridge onto the tapeup reel inside the drive.

3480, 3490, Magstar (3590) Tape

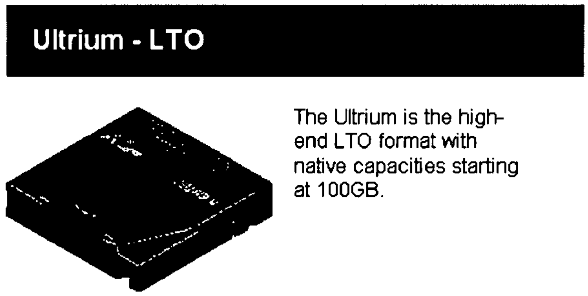


IBM's half-inch tape cartridges provide high performance for archiving and backup on mainframes and midrange systems. Capacities have ranged from 200MB to 10GB. After insertion, the tape is pulled onto the takeup reel inside the drive.

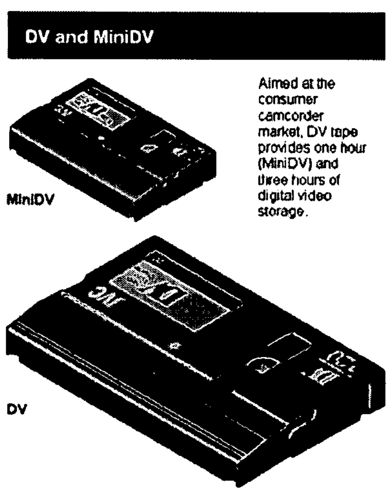
Magstar MP Tape

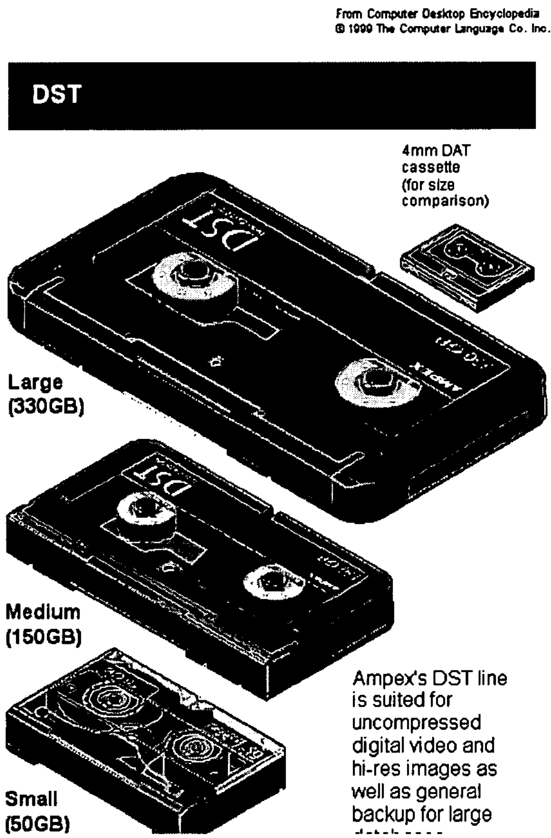


IBM's Magstar MP uses an 8mm, cassete-style cartridge that holds 5GB. Intended for midrange server use, it is especially designed for use in robotic libraries.


Ultrium - LTO
The Ultrium is the high-end LTO format with native capacities starting at 100GB.


Redwood Tape
StorageTek's Redwood tapes hold up to 50GB. They use half-inch tape and single-hub cartridges like the 3480/3490s, but are helical scan rather than linear.


DV and MiniDV
Aimed at the consumer camcorder market, DV tape provides one hour (MiniDV) and three hours of digital video storage.
MiniDV
DV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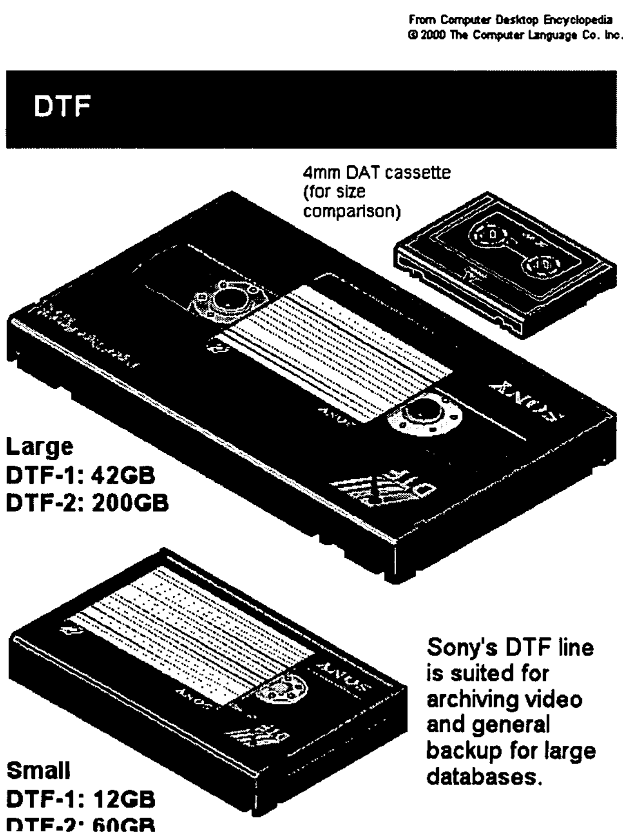
DST
4mm DAT cassette (for size comparison)
Large (330GB)
Medium (150GB)
Small (50GB)
Ampex's DST line is suited for uncompressed digital video and hi-res images as well as general backup for large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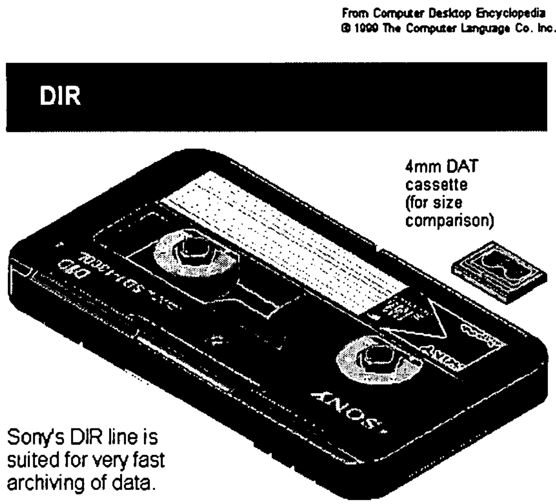
DTF
4mm DAT cassette (for size comparison)
Large
DTF-1: 42GB
DTF-2: 200GB
Small
DTF-1: 12GB
Sony's DTF line is suited for archiving video and general backup for large databases.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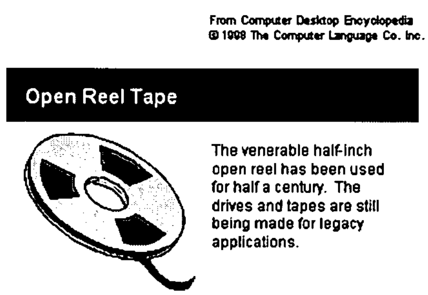
DIR
4mm DAT
cassette
(for size
comparison)
SONY
Sony's DIR line is
suited for very fast
archiving of data.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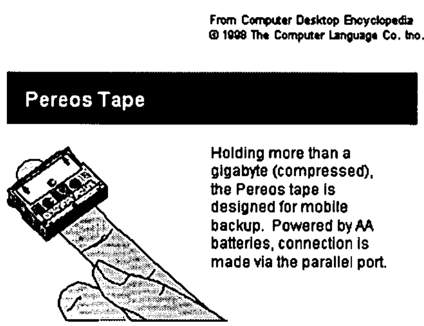
Open Reel Tape
The venerable half-inch
open reel has been used
for half a century. The
drives and tapes are still
being made for legacy
applications.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Pereos Tape
Holding more than a
gigabyte (compressed),
the Pereos tape is
designed for mobile
backup. Powered by AA
batteries, connection is
made via the parallel port.

Worldwide Market Projection COMPACT TAPE DRIVES (UNIT SHIPMENTS IN THOUSANDS)		
	2003	2009
QIC (Travan 3.5" SLR 5.25")	293	458
DAT	939	765
8MM	168	273
SAIT	1	38
DLT/SLDT	406	805
LTO (Ultrium)	262	610
TOTAL SHIPMENTS	2,074	2,949

Worldwide Market Projection PERFORMANCE TAPE DRIVES (UNIT SHIPMENTS IN THOUSANDS)		
	1999	2005
1/2" CARTRIDGE (3490, 3590, 9840/9940)	54.5	72.8
1/2" REEL	6.4	0
HELICAL SCAN (Redwood, DTF/DIR, DST)	1.5	0.6
TOTAL SHIPMENTS	62.4	73.4

Three Related Articles from CMP's TechWeb

- Sun, IBM Offer Technology To Protect Customer Data
- As HP's CIO, Randy Mott Hasn't Changed His Outsourcing Stripes
- New IBM Technology Designed To Combat Consumer Data Theft
- Find the latest news, features and reviews relating to "magnetic tape" from CMP's TechSearch.

Marketing Dictionary BARRON'S

magnetic tape

Tape on which computer-readable data is electronically stored via magnetic particles embedded in the tape; also called *mag tape*. Most magnetic tapes in use today are 1/2 inch wide, holding 800, 1600, or 6250 bytes

per inch (BPI). IBM mainframes usually require 9-track 6250 BPI tape. Magnetic tape is the most common medium used for list rentals, so that lists from a variety of sources can be fed into a computer in preparation for a merge/purge. Magnetic tape is less expensive than disk storage and, depending on the size of the tape, can have a greater storage capacity than even high-density disks. However, tapes are much more susceptible to damage during handling and shipping. Many magnetic tape users are switching from reels to cassettes. Tape cassettes are easier to load, require less storage space, and are less damage-prone than reels. The next evolutionary step will be to entirely replace tape with electronic transmission of data. *See also* key-to-tape.

US Military Dictionary OXFORD UNIVERSITY PRESS

magnetic tape

A tape or ribbon of any material impregnated or coated with magnetic or other material on which information may be placed in the form of magnetically polarized spots.

Military Dictionary

magnetic tape

(DOD) A tape or ribbon of any material impregnated or coated with magnetic or other material on which information may be placed in the form of magnetically polarized spots.

Wikipedia

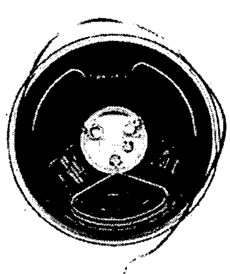
magnetic tape

Compact Cassette

Magnetic tape is a non-volatile storage medium consisting of a magnetic coating on a thin plastic strip. Nearly all recording tape is of this type, whether used for video, audio storage or general purpose digital data storage using a computer.

Magneto-optical and optical tape storage products have been developed using similar concepts, but have achieved little commercial success.

Audio recording



7 inch reel of ¼ inch-wide recording tape, typical of consumer use in the 1950s-70s.

Main article: Magnetic tape sound recording

Magnetic tape was first invented for recording sound by Fritz Pfleumer in 1926 in Germany, based on the invention of magnetic wire recording by Valdemar Poulsen in 1898. Pfleumer's invention used an iron oxide powder coating on a long strip of paper. This invention was further developed by the German electronics company AEG, which manufactured the recording machines and BASF, which manufactured the tape. An important discovery made in this period was the technique of AC biasing which dramatically improved the fidelity of the recorded audio signal.

Due to the international hostilities preceding World War II, these developments were largely kept secret from the rest of the world. It was only after the war that Americans, particularly Jack Mullin, John Herbert Orr, and Richard H. Ranger were able to bring this technology out of Germany.

A wide variety of recorders and formats have developed since.

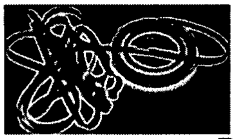
Video recording

Main article: Videotape

Video recording demands much higher bandwidth than audio recording and was made practical by the invention of quadruplex recording and, later, helical scan. Early video recorders were reel-to-reel but modern systems use cartridge tapes. Videocassette recorders are very common in homes and television production facilities, though many functions of the VCR are being replaced by optical disc media.

Data storage

Main article: Magnetic tape data storage

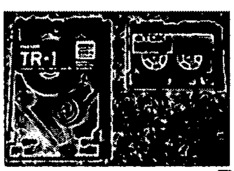


Small open reel of 9 track tape

The use of magnetic tape for data storage has been one of the constants of the computer industry. In all formats, a tape drive (or "transport" or "deck") uses precisely-controlled motors to wind the tape from one reel to another, passing a tape head as it does.

Magnetic tape was first used to record computer data in 1951 on the Eckert-Mauchly UNIVAC I. The recording medium was a thin strip of one half inch (12.65 mm) wide metal, consisting of nickel-plated bronze (called Vicalloy). Recording density was 128 characters per inch (198 micrometre/character) on eight tracks.

Early IBM tape drives were mechanically sophisticated floor-standing drives that used vacuum columns to buffer long u-shaped loops of tape. When active, the two tape reels thus fed tape into or pulled tape out of the vacuum columns, intermittently spinning in rapid, unsynchronized bursts resulting in visually-striking action. Stock shots of such vacuum-column tape drives in motion were widely used to represent "the computer" in movies and television.



Quarter-inch cartridges.

Most modern magnetic tape systems use reels that are much smaller than the old 10.5 inch open reels and are fixed inside a cartridge to protect the tape and facilitate handling. Many late 1970's and early 1980's home computers used Compact Cassettes encoded with the Kansas City standard. Modern cartridge formats include LTO, DLT, and DAT/DDC.

Tape remains a viable alternative to disk due to its lower cost per bit. Though the areal density is lower than for disk drives, the available surface on a tape is far greater. The highest capacity tape media are generally on the same order as the largest available disk drives (about 1 TB in 2007.) Tape has historically offered enough advantage in cost over disk storage to make it a viable product, particularly for backup, where media removability is also important. The rapid improvement in disk storage density and price, coupled with arguably less-vigorous innovation in tape storage, has reduced the market share of tape storage products.

References

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Magnetic storage **media**

Wire (1898) • **Tape** (1928) • Drum (1932) • Ferrite core (1949) • Hard disk (1956) • MICR (1956) • Thin film (1962) • Twistor (~1968) • Floppy disk (1969) • Bubble (~1970) • Card (19xx) • MRAM (2003)

External links

- History of Tape Recording Technology
- VidiPax Audio Format Guide

Shopping

This page is presented for the following searches: What is magnetic tape; 7-track; Streaming tape; storage technologies; Reel to reel tape; 9-track; tape; Magnetic tape drive; Magnetic tapes; Magnetic tape recording; Recording tape